The University of Wisconsin – Milwaukee
College of Engineering and Applied Science

CIVIL ENGINEERING CURRICULUM

The minimum number of credits required to complete the Bachelor of Science in Engineering with a major in Civil Engineering is 127 credits. Students who need background preparation courses in math, English, and chemistry may need additional credits. See information below regarding placement examinations.

**Engineering Core Courses (37 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAS 100</td>
<td>CEAS Freshman Orientation (recommended only)</td>
<td>1</td>
<td>none</td>
</tr>
<tr>
<td>EAS 200</td>
<td>Professional Seminar</td>
<td>1</td>
<td>none</td>
</tr>
<tr>
<td>Ind Eng 111</td>
<td>Introduction to Engineering(^1)</td>
<td>3</td>
<td>Math 116 (C)</td>
</tr>
<tr>
<td>Ind Eng 112</td>
<td>Engineering Drawing &amp; Computer Aided Design/Drafting(^1)</td>
<td>3</td>
<td>Math 116</td>
</tr>
<tr>
<td>Ind Eng 360</td>
<td>Engineering Economic Analysis</td>
<td>3</td>
<td>Jr St</td>
</tr>
<tr>
<td>Civ Eng 280</td>
<td>Computer-Based Engineering Analysis</td>
<td>3</td>
<td>Math 226 or 231, CompSci 132 or equivalent</td>
</tr>
<tr>
<td>Civ Eng 201</td>
<td>Statics</td>
<td>3</td>
<td>Math 232</td>
</tr>
<tr>
<td>Civ Eng 202</td>
<td>Dynamics</td>
<td>3</td>
<td>Civ Eng 201, Math 233 (C)</td>
</tr>
<tr>
<td>Civ Eng 303</td>
<td>Strength of Materials</td>
<td>4</td>
<td>Civ Eng 201, Math 233 (C)</td>
</tr>
<tr>
<td>MatEng 201</td>
<td>Engineering Materials(^2)</td>
<td>4</td>
<td>Chem 105 or 102 or 117</td>
</tr>
<tr>
<td>ElecEng 306</td>
<td>Introduction to Electrical Engineering</td>
<td>4</td>
<td>Physics 210, ElecEng 234</td>
</tr>
<tr>
<td>MechEng 301</td>
<td>Basic Engineering Thermodynamics</td>
<td>3</td>
<td>Math 233, Physics 209</td>
</tr>
<tr>
<td>MechEng 320</td>
<td>Introduction to Fluid Mechanics</td>
<td>3</td>
<td>MechEng 301 (C), ElecEng 234, Civ Eng 202</td>
</tr>
</tbody>
</table>

\(^1\) MechEng 110 and 111 may substitute for Ind Eng 111 and 112 for students transferring from another engineering major.

\(^2\) Civil Engineering majors may take Civ Eng 431 (with proper prerequisites) in place of MatEng 201.

**Civil Engineering Major (23 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civ Eng 250</td>
<td>Engineering Surveying</td>
<td>3</td>
<td>Soph st., Math 232</td>
</tr>
<tr>
<td>Civ Eng 335</td>
<td>Soil Mechanics</td>
<td>3</td>
<td>Civ Eng 303</td>
</tr>
<tr>
<td>Civ Eng 372</td>
<td>Introduction to Structural Design</td>
<td>4</td>
<td>Jr St, Civ Eng 303</td>
</tr>
<tr>
<td>Civ Eng 411</td>
<td>Engineering Principles of Water Resources Design</td>
<td>3</td>
<td>Jr St, MechEng 320</td>
</tr>
<tr>
<td>Civ Eng 413</td>
<td>Environmental Engineering</td>
<td>3</td>
<td>Mech Eng 320</td>
</tr>
<tr>
<td>Civ Eng 490</td>
<td>Transportation Engineering</td>
<td>3</td>
<td>Civ Eng 280, Jr St</td>
</tr>
<tr>
<td>Civ Eng 494</td>
<td>Principles of Civil Engineering Design</td>
<td>1</td>
<td>Sr St in Civil Engineering</td>
</tr>
<tr>
<td>Civ Eng 495</td>
<td>Senior Design</td>
<td>3</td>
<td>Civ Eng 335, 372, 411, 490</td>
</tr>
</tbody>
</table>

**Mathematics (14 - 16 credits)**

One of the following Calculus sequences must be completed:

- Math 231-232-233
- Or Math 221-222 (Honors)
- And ElecEng 234 Analytical Methods in Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 231</td>
<td>Calculus</td>
<td>12</td>
<td>Math placement score, or previous course with “C” grade.</td>
</tr>
<tr>
<td>Math 232</td>
<td>Calculus</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Math 233</td>
<td>Calculus</td>
<td>4</td>
<td>Math 233 (P)</td>
</tr>
</tbody>
</table>

**Chemistry (5-10 credits)**

One of the following sequences must be completed:

- Chem 105 (Suggested) or Chem 102 -104
- Chem 100 with “C” grade or Chemistry placement test

**Physics (8 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 209</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Physics 210</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**General Education Requirements**

**Distribution Requirements (15 credits)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>3</td>
<td>none</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
<td>none</td>
</tr>
<tr>
<td>Social Science</td>
<td>6</td>
<td>none</td>
</tr>
</tbody>
</table>

One of the arts, humanities, or social science courses selected must also meet the **UWM cultural diversity requirement**. (Commun 103 Public Speaking or Commun 105 Business and Professional Communication are recommended as part of the distribution requirements)

**Free Elective**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Competency Requirements</td>
<td>2</td>
</tr>
</tbody>
</table>

**English Composition (0-6 credits)**

The English Composition requirement is satisfied by:

1. Earning a satisfactory score on the English placement test, or
2. Earning a grade of C or higher in English 102
3. Transferring a grade of C or better in a course (3 credits of more) equivalent to English 102 or higher level expository writing course

**Foreign Language (0-8 credits)**

The foreign language requirement can be completed with one of these options:

1. Two years of a single foreign language in high school
2. Two semesters of a single foreign language in college
3. Demonstrate ability by examination

**Advancement to Major:** Effective Fall 2012. 1. Complete a minimum of 24 credits required for major. (Excludes: general education, prerequisite and orientation courses). 2. Complete Math 232 (or 222) with “C” or better grade. 3. Complete EAS 200 Professional Seminar. 4. Complete the English composition requirement. 5. Obtain a 2.33 GPA in all courses in item 1. The program may impose major status as a prerequisite for courses numbered 300 or above.

**Placement Examinations:** Students without previous college level credits in Math, Chemistry or English may be required to take placement exams. The results of these tests determine the appropriate course in which to register. Background prerequisite courses may be required in addition to the courses listed above.

Effective Spring 2009-2
### Technical Electives – Civil Engineering 21 CREDITS REQUIRED

The Civil Engineering and Mechanics Department offers numerous elective courses which allow students to work in one of four areas of concentration. Normally a minimum of 12 credits will be taken in an area of concentration. **Students who do not follow one of the four areas of concentration will require approval by the Department Chairperson for their programs.**

1. **Students interested in geotechnical engineering** should take Civ Eng 456, and select at least three courses from Civ Eng 360, 412, 463, 492, and 598. Students are also strongly recommended to take Geo Sci 470.

2. **Students interested in municipal and transportation engineering** should select at least three courses from Civ Eng 492, 590, 592, 594, 596, 598, and 610.

3. **Students interested in structural engineering** should take Civ Eng 360, 463, 571, 572 and select at least two courses from Civ Eng 456, 560, 573, 574, 578 and 579.

4. **Students interested in water resources and environmental engineering** should select at least three courses from Civ Eng 412, 511, 521, and 610.

#### Group A Technical Electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civ Eng 412</td>
<td>3</td>
<td>Jr St, Math 233, MechEng 320</td>
</tr>
<tr>
<td>Civ Eng 456</td>
<td>3</td>
<td>Jr St, Civ Eng 335</td>
</tr>
<tr>
<td>Civ Eng 463</td>
<td>3</td>
<td>ElectEng 234, Civ Eng 303, MechEng 320(C)</td>
</tr>
<tr>
<td>Civ Eng 492</td>
<td>3</td>
<td>Sr. St.</td>
</tr>
<tr>
<td>Civ Eng 511</td>
<td>3</td>
<td>Jr St, Civ Eng 411</td>
</tr>
<tr>
<td>Civ Eng 521</td>
<td>3</td>
<td>Jr St, Civ Eng 411</td>
</tr>
<tr>
<td>Civ Eng 571</td>
<td>3</td>
<td>Jr. St. Civ Eng 360, 372</td>
</tr>
<tr>
<td>Civ Eng 572</td>
<td>3</td>
<td>Jr St, Civ Eng 360, 372</td>
</tr>
<tr>
<td>Civ Eng 573</td>
<td>3</td>
<td>Jr St, Civ Eng 360, 372</td>
</tr>
<tr>
<td>Civ Eng 574</td>
<td>3</td>
<td>Jr St Civ Eng 360, 372</td>
</tr>
<tr>
<td>Civ Eng 578</td>
<td>3</td>
<td>Civ Eng 360</td>
</tr>
<tr>
<td>Civ Eng 579</td>
<td>3</td>
<td>Sr St, Civ Eng 571 or 572</td>
</tr>
<tr>
<td>Civ Eng 590</td>
<td>3</td>
<td>Sr. St.</td>
</tr>
<tr>
<td>Civ Eng 592</td>
<td>3</td>
<td>Sr. St.</td>
</tr>
<tr>
<td>Civ Eng 594</td>
<td>3</td>
<td>Sr. St., Cons Instr</td>
</tr>
<tr>
<td>Civ Eng 596</td>
<td>3</td>
<td>Civ Eng 335 (C), Civ Eng 490</td>
</tr>
<tr>
<td>Civ Eng 598</td>
<td>3</td>
<td>Jr. St, Civ Eng 335</td>
</tr>
<tr>
<td>Civ Eng 610</td>
<td>3</td>
<td>Sr St, Civ Eng 413</td>
</tr>
<tr>
<td>Civ Eng 614</td>
<td>3</td>
<td>Civ Eng 413</td>
</tr>
</tbody>
</table>

#### Group B Technical Electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civ Eng 360</td>
<td>3</td>
<td>Civ Eng 303</td>
</tr>
<tr>
<td>Civ Eng 401</td>
<td>3</td>
<td>Jr St, Civ Eng 303</td>
</tr>
<tr>
<td>Civ Eng 431</td>
<td>3</td>
<td>Jr St, Civ Eng 303</td>
</tr>
<tr>
<td>Civ Eng 502</td>
<td>3</td>
<td>Jr St, Civ Eng 303</td>
</tr>
<tr>
<td>Civ Eng 560</td>
<td>3</td>
<td>Jr St, Civ Eng 360, 372</td>
</tr>
<tr>
<td>Civ Eng 580</td>
<td>3</td>
<td>Jr St, ElecEng 234</td>
</tr>
</tbody>
</table>

#### Group C Technical Electives:

**Group C1:** Take a minimum of 3 credits of Group C electives.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geo Sci 414</td>
<td>3</td>
<td>Jr St., Geo Sci 302(C), Math 231(C)</td>
</tr>
<tr>
<td>Geo Sci 463</td>
<td>3</td>
<td>Jr St., Geo Sci 100 or 101, Math 232</td>
</tr>
<tr>
<td>Geo Sci 464</td>
<td>3</td>
<td>Jr St., Chem 100</td>
</tr>
</tbody>
</table>

**Group C2:** Select no more than 3 credits from the C2 list.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ind Eng 467</td>
<td>3</td>
<td>Jr St, Math 233</td>
</tr>
<tr>
<td>Any Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Chemistry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Group D Technical Electives:** Select no more than 3 credits from this list.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAS 001</td>
<td>3¹</td>
<td>None</td>
</tr>
<tr>
<td>English 206</td>
<td>3</td>
<td>Soph St, Eng Comp Reqmt</td>
</tr>
<tr>
<td>Geog 403</td>
<td>3</td>
<td>Jr St, Geo 215</td>
</tr>
<tr>
<td>Comp Sci 201</td>
<td>3</td>
<td>Math 105</td>
</tr>
<tr>
<td>Ind Eng 445</td>
<td>3</td>
<td>Jr St, Math 233</td>
</tr>
<tr>
<td>Ind Eng 465</td>
<td>3</td>
<td>Ind Eng 467, 455</td>
</tr>
<tr>
<td>MechEng 321</td>
<td>3</td>
<td>Jr. St, MatEng 201</td>
</tr>
<tr>
<td>Urb Plan 591</td>
<td>3</td>
<td>Jr St</td>
</tr>
<tr>
<td>Geog 215</td>
<td>3</td>
<td>None</td>
</tr>
</tbody>
</table>

¹Students who earn 3 or more credits of Co-op may use 3 of those credits as approved technical electives.